

PCTWORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : C11D 1/74, 1/72, 1/825, 3/48, 3/43, 3/18, 3/50	A1	(11) International Publication Number: WO 98/16605 (43) International Publication Date: 23 April 1998 (23.04.98)
(21) International Application Number: PCT/US97/18292 (22) International Filing Date: 10 October 1997 (10.10.97) (30) Priority Data: 08/729,474 11 October 1996 (11.10.96) US (71) Applicant: COLGATE-PALMOLIVE COMPANY [US/US]; 300 Park Avenue, New York, NY 10022 (US). (72) Inventors: BLANVALET, Claude; 61, rue Bossy, B-4031 Angleur (BE). LAMBREMONT, Yves; 47, avenue Sluysmans, B-4030 Grivegnée (BE). (74) Agent: NANFELDT, Richard, E.; Colgate-Palmolive Company, 909 River Road, Piscataway, NJ 08855-1343 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
(54) Title: ALL PURPOSE LIQUID CLEANING COMPOSITIONS (57) Abstract An improvement is described in compositions which is especially effective in disinfecting the surface being cleaned and in the removal of oily and greasy soil which contains at least one nonionic surfactant and/or an ethoxylated glycerol type compound, a hydrocarbon ingredient, a water soluble solvent, a bactericide and water.		

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon			PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

ALL PURPOSE LIQUID CLEANING COMPOSITIONS

Background Of The Invention

British Patent No 1,453,385 discloses polyesterified nonionic surfactants similar
5 to the polyesterified nonionic surfactants of the instant invention. However, these
nonionic surfactants of British Patent 1,453,385 do not disclose the formula (II) portion
of the instant composition. Additionally, the formulated compositions of British Patent
1,453,385 fail to disclose the critical limitations of the instant invention.

A number of patents teach esterified ethoxylated glycerol compounds for various
10 applications. These patents are Great Britain 1,453,385; Japan 59-1600 and Japan
58-206693 and European Patent Application 0586,323A1. These publications fail to
appreciate that a mixture of esterified ethoxylated glycerol and nonesterified
ethoxylated glycerol, when used in a hard surface cleaning composition, functions as a
grease release agent.

15 Summary of the Invention

In one aspect, the invention generally provides a stable, clear all-purpose, hard
surface cleaning composition especially effective in disinfecting the surface being
cleaned and in the removal of oily and greasy oil. The composition includes, on a
weight basis:

20 from 0.1% to 20% of at least nonionic surfactant and/or a mixture of a partially
esterified ethoxylated polyhydric alcohol, a fully esterified ethoxylated polyhydric
alcohol, and a nonesterified polyhydric alcohol (said mixture being herein after referred
to as an ethoxylated glycerol type compound);

0 to 15% of a water soluble solvent

25 0.4% to 1.0% of a perfume or water insoluble hydrocarbon;

0.25% to 8% of a disinfectant agent; and

the balance of water, said proportions being based upon the total weight of the
composition.

Detailed Description of the Invention

The present invention relates to a stable hard surface cleaning composition by weight: 0.1% to 20% of a nonionic surfactant and/or an ethoxylated glycerol type compound, 0 to 15% of a water soluble solvent; 0.1% to 1.0% of a water insoluble organic compound, essential oil, or a perfume, 0.25% to 8% of a disinfectant agent and the balance being water.

As used herein and in the appended claims the term "perfume" is used in its ordinary sense to refer to and include any non-water soluble fragrant substance or mixture of substances including natural (i.e., obtained by extraction of flower, herb, blossom or plant), artificial (i.e., mixture of natural oils or oil constituents) and synthetically produced substance) odoriferous substances. Typically, perfumes are complex mixtures of blends of various organic compounds such as alcohols, aldehydes, ethers, aromatic compounds and varying amounts of essential oils (e.g., terpenes) such as from 0% to 80%, usually from 10% to 70% by weight, the essential oils themselves being volatile odoriferous compounds and also serving to dissolve the other components of the perfume.

In the present invention the precise composition of the perfume is of no particular consequence to cleaning performance so long as it meets the criteria of water immiscibility and having a pleasing odor. Naturally, of course, especially for cleaning compositions intended for use in the home, the perfume, as well as all other ingredients, should be cosmetically acceptable, i.e., non-toxic, hypoallergenic, etc.. The instant compositions show a marked improvement in ecotoxicity as compared to existing commercial products when mixture of a partially esterified ethoxylated polyhydric alcohol, a fully esterified ethoxylated polyhydric alcohol, and a nonesterified polyhydric alcohol (said mixture being herein after referred to as an ethoxylated glycerol type compound) are used as the nonionic detergent.

The water insoluble organic compound, essential oil or perfume is present in the composition in an amount of from 0.1% to 1.0% by weight, preferably from 0.4% to

0.8% by weight, especially preferably from 0.5% to 0.6% by weight, such as weight percent.

Furthermore, although superior grease removal performance will be achieved for perfume compositions not containing any terpene solvents, it is apparently difficult for perfumers to formulate sufficiently inexpensive perfume compositions for products of this type (i.e., very cost sensitive consumer-type products) which includes less than 20%, usually less than 30%, of such terpene solvents.

The water insoluble saturated or unsaturated organic compound is selected from the group consisting of water insoluble hydrocarbons containing a cycloalkyl group having 5 to 10 carbon atoms, wherein the alkyl or cycloalkyl group can be saturated or unsaturated and the cycloalkyl group can have one or more saturated or unsaturated alkyl groups having 1 to 20 carbon atoms affixed to the alkyl or cycloalkyl group and one or more halogens, alcohols, nitro or ester group substituted on the cycloalkyl group or alkyl group; aromatic hydrocarbons; water insoluble ethers; water insoluble carboxylic acids, water insoluble alcohols, water insoluble amines, water insoluble esters, nitropropane, 2,5dimethylhydrofuran, 2-ethyl-2-methyl-1,3dioxolane, 3-ethyl-4-propyl tetrahydropyran, N-isopropyl morpholine, alpha-methyl benzyl dimethylamine, methyl chloroform and methyl perchloropropane, and mixtures thereof. Typical hydrocarbons are cyclohexyl-1-decane, methyl-3-cyclohexyl-9-nonane, methyl-3-cyclohexyl-6-nonane, dimethyl cycloheptane, trimethyl cyclopentane, ethyl-2-isopropyl-4-cyclohexane. Typical aromatic hydrocarbons are bromotoluene, diethyl benzene, cyclohexyl bromoxylene, ethyl-3-pentyl-4-toluene, tetrahydronaphthalene, nitrobenzene, and methyl naphthalene. Typical water insoluble esters are benzyl acetate, dicyclopentadienylacetate, isononyl acetate, isobornyl acetate and isobutyl isobutyrate. Typical water insoluble ethers are di(alpha-methyl benzyl) ether, and diphenyl ether. A typical alcohol is phenoxyethanol. A typical water insoluble nitro derivative is nitro propane.

Suitable essential oils are selected from the group consisting of:

- Anethole 20/21 natural, Aniseed oil china star, Aniseed oil globe brand, Balsam (Peru), Basil oil (India), Black pepper oil, Black pepper oleoresin 40/20, Bois de Rose (Brazil) FOB, Borneol Flakes (China), Camphor oil, White, Camphor powder synthetic technical, Cananga oil (Java), Cardamom oil, Cassia oil (China), Cedarwood oil (China)
- 5 BP, Cinnamon bark oil, Cinnamon leaf oil, Citronella oil, Clove bud oil, Clove leaf, Coriander (Russia), Coumarin 69°C (China), Cyclamen Aldehyde, Diphenyl oxide, Ethyl vanilin, Eucalyptol, Eucalyptus oil, Eucalyptus citriodora, Fennel oil, Geranium oil, Ginger oil, Ginger oleoresin (India), White grapefruit oil, Guaiacwood oil, Gurjun balsam, Heliotropin, Isobornyl acetate, Isolongifolene, Juniper berry oil, L-methyl
- 10 acetate, Lavender oil, Lemon oil, Lemongrass oil, Lime oil distilled, Litsea Cubeba oil, Longifolene, Menthol crystals, Methyl cedryl ketone, Methyl chavicol, Methyl salicylate, Musk ambrette, Musk ketone, Musk xylol, Nutmeg oil, Orange oil, Patchouli oil, Peppermint oil, Phenyl ethyl alcohol, Pimento berry oil, Pimento leaf oil, Rosalin, Sandalwood oil, Sandenol, Sage oil, Clary sage, Sassafras oil, Spearmint oil, Spike
- 15 lavender, Tagetes, Tea tree oil, Vanilin, Vetyver oil (Java), Wintergreen, Allocimene, Arbanex™, Arbano®, Bergamot oils, Camphene, Alpha-Campholenic aldehyde, l-Carvone, Cineoles, Citral, Citronellol Terpenes, Alpha-Citronellol, Citronellyl Acetate, Citronellyl Nitrile, Para-Cymene, Dihydroanethole, Dihydrocarveol, d-Dihydrocarvone, Dihydrolinalool, Dihydromyrcene, Dihydromyrcenol, Dihydromyrcenyl Acetate,
- 20 Dihydroterpineol, Dimethyloctanal, Dimethyloctanol, Dimethyloctanyl Acetate, Estragole, Ethyl-2 Methylbutyrate, Fenchol, Ferniol™, Florilys™, Geraniol, Geranyl Acetate, Geranyl Nitrile, Glidmint™ Mint oils, Glidox™, Grapefruit oils, trans-2-Hexenal, trans-2-Hexenol, cis-3-Hexenyl Isovalerate, cis-3-Hexanyl-2-methylbutyrate, Hexyl Isovalerate, Hexyl-2-methylbutyrate, Hydroxycitronellal, Ionone, Isobornyl Methylether,
- 25 Linalool, Linalool Oxide, Linalyl Acetate, Menthane Hydroperoxide, l-Methyl Acetate, Methyl Hexyl Ether, Methyl-2-methylbutyrate, 2-Methylbutyl Isovalerate, Myrcene, Nerol, Neryl Acetate, 3-Octanol, 3-Octyl Acetate, Phenyl Ethyl-2-methylbutyrate, Petitgrain oil, cis-Pinane, Pinane Hydroperoxide, Pinanol, Pine Ester, Pine Needle oils, Pine oil, alpha-Pinene, beta-Pinene, alpha-Pinene Oxide, Plinol, Plinyl Acetate, Pseudo

Ionone, Rhodinol, Rhodiny Acetate, Spice oils, alpha-Terpinene, gamma-Terpinene, Terpinene-4-OL, Terpeneol, Terpinolene, Terpinyl Acetate, Tetrahydrolinalool, Tetrahydrolinalyl Acetate, Tetrahydromyrcenol, Tetralol[®], Tomato oils, Vitalizair, Zestoral[™].

- 5 The at least one nonionic surfactant is present in amounts of 0.1% to 15%, preferably 1% to 12% by weight of the composition and provides superior performance in the removal of oily soil and mildness to human skin.

 The water soluble nonionic surfactants utilized in this invention are commercially well known and include the primary aliphatic alcohol ethoxylates, secondary aliphatic
10 alcohol ethoxylates, alkylphenol ethoxylates and ethylene-oxide-propylene oxide condensates on primary alkanols, such as Plurafacs (BASF) and condensates of ethylene oxide with sorbitan fatty acid esters such as the Tweens (ICI). The nonionic synthetic organic detergents generally are the condensation products of an organic
aliphatic or alkyl aromatic hydrophobic compound and hydrophilic ethylene oxide
15 groups. Practically any hydrophobic compound having a carboxy, hydroxy, amido, or amino group with a free hydrogen attached to the nitrogen can be condensed with ethylene oxide or with the polyhydration product thereof, polyethylene glycol, to form a water-soluble nonionic detergent. Further, the length of the polyethenoxy chain can be
adjusted to achieve the desired balance between the hydrophobic and hydrophilic
20 elements.

 The nonionic detergent class includes the condensation products of a higher alcohol (e.g., an alkanol containing 8 to 18 carbon atoms in a straight or branched chain configuration) condensed with 5 to 30 moles of ethylene oxide, for example, lauryl or myristyl alcohol condensed with 16 moles of ethylene oxide (EO), tridecanol
25 condensed with 6 to moles of EO, myristyl alcohol condensed with 10 moles of EO per mole of myristyl alcohol, the condensation product of EO with a cut of coconut fatty alcohol containing a mixture of fatty alcohols with alkyl chains varying from 10 to 14 carbon atoms in length and wherein the condensate contains either 6 moles of EO per

mole of total alcohol or 9 moles of EO per mole of alcohol and tallow alcohol ethoxylates containing 6 EO to 11 EO per mole of alcohol.

A preferred group of the foregoing nonionic surfactants are the Neodol ethoxylates (Shell Co.), which are higher aliphatic, primary alcohol containing 9-15 carbon atoms, such as C₉-C₁₁ alkanol condensed with 7 to 10 moles of ethylene oxide (Neodol 91-8), C₁₂₋₁₃ alkanol condensed with 6.5 moles ethylene oxide (Neodol 23-6.5), C₁₂₋₁₅ alkanol condensed with 12 moles ethylene oxide (Neodol 25-12), C₁₄₋₁₅ alkanol condensed with 13 moles ethylene oxide (Neodol 45-13), and the like. Such ethoxamers have an HLB (hydrophobic lipophilic balance) value of 8 to 15 and give good O/W emulsification, whereas ethoxamers with HLB values below 8 contain less than 5 ethyleneoxide groups and tend to be poor emulsifiers and poor detergents.

Additional satisfactory water soluble alcohol ethylene oxide condensates are the condensation products of a secondary aliphatic alcohol containing 8 to 18 carbon atoms in a straight or branched chain configuration condensed with 5 to 30 moles of ethylene oxide. Examples of commercially available nonionic detergents of the foregoing type are C₁₁-C₁₅ secondary alkanol condensed with either 9 EO (Tergitol 15-S-9) or 12 EO (Tergitol 15-S-12) marketed by Union Carbide.

Other suitable nonionic detergents include the polyethylene oxide condensates of one mole of alkyl phenol containing from 8 to 18 carbon atoms in a straight- or branched chain alkyl group with 5 to 30 moles of ethylene oxide. Specific examples of alkyl phenol ethoxylates include nonyl phenol condensed with 9.5 moles of EO per mole of nonyl phenol, dinonyl phenol condensed with 12 moles of EO per mole of phenol, dinonyl phenol condensed with 15 moles of EO per mole of phenol and diisooctylphenol condensed with 15 moles of EO per mole of phenol. Commercially available nonionic surfactants of this type include Igepal CO-630 (nonyl phenol ethoxylate) marketed by GAF Corporation.

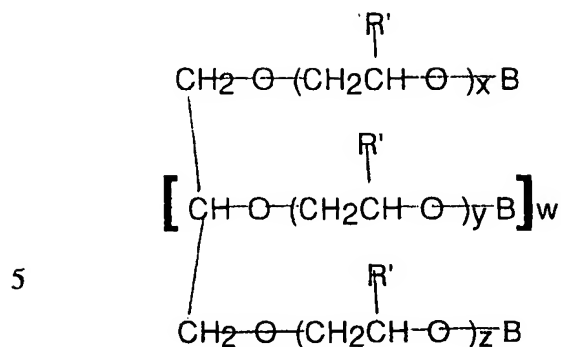
Also among the satisfactory nonionic detergents are the water-soluble condensation products of a C₈-C₂₀ alkanol with a heteric mixture of ethylene oxide and propylene oxide wherein the weight ratio of ethylene oxide to propylene oxide is

from 2.5:1 to 4:1, preferably 2.8:1 to 3.3:1, with the total of the ethylene oxide and propylene oxide (including the terminal ethanol or propanol group) being from 60-85%, preferably 70-80%, by weight. Such detergents are commercially available from BASF-Wyandotte and a particularly preferred detergent is a C₁₀-C₁₆ alkanol condensate with
5 ethylene oxide and propylene oxide, the weight ratio of ethylene oxide to propylene oxide being 3:1 and the total alkoxy content being 75% by weight.

Condensates of 2 to 30 moles of ethylene oxide with sorbitan mono- and tri-C₁₀-C₂₀ alkanolic acid esters having a HLB of 8 to 15 also may be employed as the nonionic detergent ingredient in the described composition. These surfactants are well
10 known and are available from Imperial Chemical Industries under the Tween trade name. Suitable surfactants include polyoxyethylene (4) sorbitan monolaurate, polyoxyethylene (4) sorbitan monostearate, polyoxyethylene (20) sorbitan trioleate and polyoxyethylene (20) sorbitan tristearate.

Other suitable water-soluble nonionic detergents are marketed under the trade
15 name "Pluronic." The compounds are formed by condensing ethylene oxide with a hydrophobic base formed by the condensation of propylene oxide with propylene glycol. The molecular weight of the hydrophobic portion of the molecule is of the order of 950 to 4000 and preferably 200 to 2,500. The addition of polyoxyethylene radicals to the hydrophobic portion tends to increase the solubility of the molecule as a whole
20 so as to make the surfactant water-soluble. The molecular weight of the block polymers varies from 1,000 to 15,000 and the polyethylene oxide content may comprise 20% to 80% by weight. Preferably, these surfactants will be in liquid form and satisfactory surfactants are available as grades L 62 and L 64.

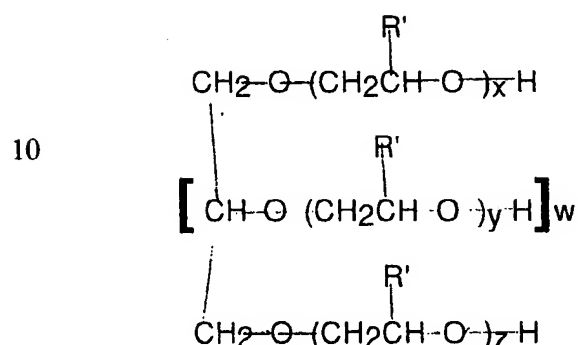
The instant composition can contain alone or in combination with the at least
25 one nonionic surfactant a composition (herein after referred to as ethoxylated glycerol type compound) which is a mixture of a fully esterified ethoxylated polyhydric alcohol, a partially esterified ethoxylated polyhydric alcohol and a nonesterified ethoxylated polyhydric alcohol, wherein the preferred polyhydric alcohol is glycerol, and the compound is



Formula

(I)

and



Formula

(II)

wherein w equals one to four, most preferably one. B is selected from the group
 15 consisting of hydrogen or a group represented by:



wherein R is selected from the group consisting of alkyl group having 6 to 22 carbon
 atoms, more preferably 11 to 15 carbon atoms and alkenyl groups having 6 to 22
 20 carbon atoms, more preferably 11 to 15 carbon atoms, wherein a hydrogenated tallow
 alkyl chain or a coco alkyl chain is most preferred, wherein at least one of the B groups
 is represented by said



25 and R' is selected from the group consisting of hydrogen and methyl groups; x, y and z
 have a value between 0 and 60, more preferably 0 to 40, provided that (x+y+z) equals
 2 to 100, preferably 4 to 24 and most preferably 4 to 19, wherein in Formula (I) the ratio
 of monoester / diester / triester is 45 to 90 / 5 to 40 / 1 to 20, more preferably 50 to 90 /
 9 to 32 / 1 to 12, wherein the ratio of Formula (I) to Formula (II) is a value between 3 to

0.02, preferably 3 to 0.1, most preferably 1.5 to 0.2, wherein it is most preferred that there is more of Formula (II) than Formula (I) in the mixture that forms the compound.

The ethoxylated glycerol type compound used in the instant composition is manufactured by the Kao Corporation and sold under the trade name Levenol such as
5 Levenol F-200 which has an average EO of 6 and a molar ratio of coco fatty acid to glycerol of 0.55 or Levenol V501/2 which has an average EO of 17 and a molar ratio of tallow fatty acid to glycerol of 1.0. It is preferred that the molar ratio of the fatty acid to glycerol is less than 1.7, more preferably less than 1.5 and most preferably less than 1.0. The ethoxylated glycerol type compound has a molecular weight of 400 to 1600,
10 and a pH (50 grams / liter of water) of 5-7. The Levenol compounds are substantially non irritant to human skin and have a primary biodegradability higher than 90% as measured by the Wickbold method Bias-7d.

Two examples of the Levenol compounds are Levenol V-501/2 which has 17 ethoxylated groups and is derived from tallow fatty acid with a fatty acid to glycerol ratio
15 of 1.0 and a molecular weight of 1465 and Levenol F-200 has 6 ethoxylated groups and is derived from coco fatty acid with a fatty acid to glycerol ratio of 0.55. Both Levenol F-200 and Levenol V-501/2 are composed of a mixture of Formula (I) and Formula (II). The Levenol compounds has ecotoxicity values of algae growth inhibition > 100 mg/liter; acute toxicity for Daphniae > 100 mg/liter and acute fish toxicity > 100
20 mg/liter. The Levenol compounds have a ready biodegradability higher than 60% which is the minimum required value according to OECD 301B measurement to be acceptably biodegradable.

Polyesterified nonionic compounds also useful in the instant compositions are Crovol PK-40 and Crovol PK-70 manufactured by Croda GMBH of the Netherlands.
25 Crovol PK-40 is a polyoxyethylene (12) Palm Kernel Glyceride which has 12 EO groups. Crovol PK-70 which is preferred is a polyoxyethylene (45) Palm Kernel Glyceride have 45 EO groups.

Although all the above nonionic compounds are highly suitable, some of them do not deliver the right foam control and / or low enough ecotoxicity value. This is the

reason why the present compositions can incorporate new nonionic type of surfactant which deliver outstanding foam control and very good ecotoxicity value. Both Ni's are produced by DOW chemical which chemical structure is shown below.

Their development name are Polyglycol EB95-0779 and EB-0843/1.

- 5 The major class of compounds found to provide highly suitable water soluble solvent for the composition are water-soluble polyethylene glycols having a molecular weight of 150 to 1000, polypropylene glycol of the formula $\text{HO}(\text{CH}_2\text{CHCH}_2\text{O})_n\text{H}$ wherein n is a number from 2 to 18, mixtures of polyethylene glycol and polypropyl glycol (Synalox) and mono and di C₁-C₆ alkyl ethers and esters of ethylene glycol and
- 10 propylene glycol having the structural formulas $\text{R}(\text{X})_n\text{OH}$, $\text{R}_1(\text{X})_n\text{OH}$, $\text{R}(\text{X})_n\text{OR}$ and $\text{R}_1(\text{X})_n\text{OR}_1$ wherein R is C₁-C₆ alkyl group, R₁ is C₂-C₄ acyl group, X is $(\text{OCH}_2\text{CH}_2)$ or $(\text{OCH}_2(\text{CH}_3)\text{CH})$ and n is a number from 1 to 4, diethylene glycol, triethylene glycol, an alkyl lactate, wherein the alkyl group has 1 to 6 carbon atoms, 1-methoxy-2-propanol, 1-methoxy-3-propanol, and 1-methoxy 2-, 3- or 4-butanol.
- 15 Representative members of the polypropylene glycol include dipropylene glycol and polypropylene glycol having a molecular weight of 150 to 1000, e.g., polypropylene glycol 400. Other satisfactory glycol ethers are ethylene glycol monobutyl ether (butyl cellosolve), diethylene glycol monobutyl ether (butyl carbitol), triethylene glycol monobutyl ether, mono, di, tri propylene glycol monobutyl ether, tetraethylene glycol
- 20 monobutyl ether, mono, di, tripropylene glycol monomethyl ether, propylene glycol monomethyl ether, ethylene glycol monohexyl ether, diethylene glycol monohexyl ether, propylene glycol tertiary butyl ether, ethylene glycol monoethyl ether, ethylene glycol monomethyl ether, ethylene glycol monopropyl ether, ethylene glycol monopentyl ether, diethylene glycol monomethyl ether, diethylene glycol monoethyl
- 25 ether, diethylene glycol monopropyl ether, diethylene glycol monopentyl ether, triethylene glycol monomethyl ether, triethylene glycol monoethyl ether, triethylene glycol monopropyl ether, triethylene glycol monopentyl ether, triethylene glycol monohexyl ether, mono, di, tripropylene glycol monoethyl ether, mono, di tripropylene glycol monopropyl ether, mono, di, tripropylene glycol monopentyl ether, mono, di,

tripropylene glycol monohexyl ether, mono, di, tributylene glycol mono methyl ether, mono, di, tributylene glycol monoethyl ether, mono, di, tributylene glycol monopropyl ether, mono, di, tributylene glycol monobutyl ether, mono, di, tributylene glycol monopentyl ether and mono, di, tributylene glycol monohexyl ether, ethylene glycol monoacetate and dipropylene glycol propionate. These glycol type water soluble solvents are at a concentration of 1.0 to 14 weight %, more preferably 2.0 weight % to 10 %. While all of the aforementioned glycol ether compounds provide the described stability, the most preferred cosurfactant compounds of each type, on the basis of cost and cosmetic appearance (particularly odor), is tripropylene glycol monobutyl ether

5

10 Generally, amounts of water soluble solvents in the range of from 0 to 15%, preferably from 1 wt. % to 12 wt. % provide stable compositions for the above-described levels of primary surfactants and water insoluble hydrocarbon and any other additional ingredients as described below.

The instant compositions contain 0.25 to 8 wt. %, more preferably 0.5 to 6 wt. % of a disinfectant agent selected from the group consisting of C₈-C₁₆ alkyl amines, C₈-C₁₆ alkyl benzyl dimethyl ammonium chlorides, C₈-C₁₆ dialkyl dimethyl ammonium chlorides, C₈-C₁₆ alkyl, C₈-C₁₄ alkyl dimethyl ammonium chloride and chlorhexidine and mixtures thereof.

15

Some typical disinfectant agent useful in the instant compositions are manufactured by Lonza, S.A. They are: Bardac 2180 which is N-decyl-N-isonoxyl-N, N-dimethyl ammonium chloride; Bardac 22 which is didecyl dimethyl ammonium chloride; Bardac LF which is N,Ndioctyl-N, N-dimethyl ammonium chloride; Bardac 114 which is a mixture in a ratio of 1:1:1 of N-alkyl-N, N-didecyl-N, N-dimethyl ammonium chloride/N-alkyl-N, N-dimethyl-N-ethyl ammonium chloride; and Barquat MB-50 which

20

25 is N-alkyl-N, N-dimethyl-N-benzyl ammonium chloride.

The final essential ingredient in the inventive compositions having improved interfacial tension properties is water. The proportion of water in the compositions generally is in the range of 20% to 97%, preferably 70% to 97% by weight of the usual diluted o/w composition.

In addition to the above-described essential ingredients, the compositions of this invention may often and preferably do contain one or more additional ingredients which serve to improve overall product performance.

The all-purpose liquid cleaning composition of this invention may, if desired, also
5 contain other components either to provide additional effect or to make the product more attractive to the consumer. The following are mentioned by way of example: Colors or dyes in amounts up to 0.5% by weight, 2,6-di-tert.butyl-p-cresol, etc., in amounts up to 2% by weight; and pH adjusting agents, such as sulfuric acid or sodium hydroxide, as needed. Furthermore, if opaque compositions are desired, up to 4% by
10 weight of an opacifier may be added.

In final form, the all-purpose liquids are clear compositions and exhibit stability at reduced and increased temperatures. More specifically, such compositions remain clear and stable in the range of 5°C to 50°C, especially 10°C to 43°C. Such compositions exhibit a pH in the acid or neutral range depending on intended end use.
15 The liquid compositions are readily pourable and exhibit a viscosity in the range of 6 to 60 milliPascal . second (mPas.) as measured at 25°C. with a Brookfield RVT Viscometer using a #1 spindle rotating at 20 RPM. Preferably, the viscosity is maintained in the range of 10 to 40 mPas.

The compositions are directly ready for use or can be diluted as desired and in
20 either case no or only minimal rinsing is required and substantially no residue or streaks are left behind. Furthermore, because the compositions are free of detergent builders such as alkali metal polyphosphates they are environmentally acceptable and provide a better "shine" on cleaned hard surfaces.

When intended for use in the neat form, the liquid compositions can be
25 packaged under pressure in an aerosol container or in a pump-type sprayer for the so-called spray-and-wipe type of application.

Because the compositions as prepared are aqueous liquid formulations , the compositions are easily prepared simply by combining all the ingredients in a suitable vessel or container. The order of mixing the ingredients is not particularly important

and generally the various ingredients can be added sequentially or all at once or in the form of aqueous solutions of each or all of the primary detergents and cosurfactants can be separately prepared and combined with each other and with the perfume. It is not necessary to use elevated temperatures in the formation step and room

5 temperature is sufficient.

The instant formulas explicitly exclude alkali metal silicates and alkali metal builders such as alkali metal polyphosphates, alkali metal carbonates, alkali metal phosphonates and alkali metal citrates because these materials, if used in the instant composition, would cause the composition to have a high pH as well as leaving residue
10 on the surface being cleaned.

The following examples illustrate liquid cleaning compositions of the described invention. Unless otherwise specified, all percentages are by weight. The exemplified compositions are illustrative only and do not limit the scope of the invention. Unless
15 otherwise specified, the proportions in the examples and elsewhere in the specification are by weight.

Example 1

The following compositions in wt. % were prepared by simple mixing procedure:

	A	B	C	D	E	F	G	H
Polyglycol nonionic EB95-0779	4	4	4	4	4	4	4	4
Polyglycol nonionic EB96-0843/1	1	1	1	1	1	1	1	1
Chlorohexidine diacetate	1.5							
Chlorohexidine digluconate		1.5						
Alkylamine			1.5					
Didecylmethyl ammonium chloride				1.5				
50% Bardac 22 plus 50% Barquat MB-50					1.5			
Bardac 2180						1.5		
C12-C16 alkyl dimethyl benzyl ammonium chloride							1.5	
Perfume	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Tripropylene glycol N-butyl ether	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Water	Bal.	Bal.	Bal.	Bal.	Bal.	Bal.	Bal.	Bal.
Disinfecting results								
50% dilution in water	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Fail
2% dilution in water	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Fail
Degreasing test								
Neat	Good	Good	Good	Good	Good	Good	Good	Good
Dilute	Good	Good	Good	Good	Good	Good	Good	Good

- 5 The test protocol used to assess disinfection is the well known French AFNOR Norm 72-151 which uses four different strains of bacteria, a short contact time and calls for a bacteria count reduction of 5 log.

In summary, the described invention broadly relates to an improved composition containing a nonionic surfactant and/or an ethoxylated glycerol type compound, a water
 10 soluble solvent, a hydrocarbon ingredient, a disinfectant agent and water.

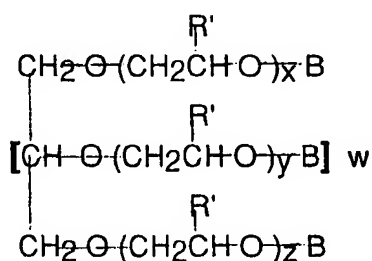
What Is Claimed:

1. A composition comprising:

(a) 0.1 wt. % to 20 wt. % of at least one nonionic surfactant and/or a mixture

of:

5

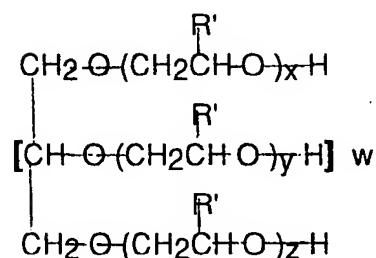


(I)

10

and

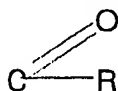
15



(II)

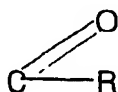
wherein w equals one to four. B is selected from the group consisting of hydrogen or a group represented by:

20



wherein R is selected from the group consisting of alkyl group having 6 to 22 carbon atoms, and alkenyl groups having 6 to 22 carbon atoms, wherein at least one of the B groups is represented by said

25



R' is selected from the group consisting of hydrogen and methyl groups; x, y and z have a value between 0 and 60, provided that (x+y+z) equals 2 to 100, wherein in Formula (I) the ratio of monoester/diester/triester is 40 to 90/5 to 35/1 to 20, wherein the ratio of Formula (I) to Formula (II) is a value between 3 to 0.02;

30

(b) 0.25 wt. % to 8 wt. % of a disinfectant agent;

(c) 0.1 wt. % to 15wt. % of a water soluble solvent;

(d) 0.1 wt. % to 1.0 wt. % of a water insoluble hydrocarbon, essential oil or a perfume; and

(e) the balance being water.

2. The cleaning composition of Claim 1 which contains from 0.5 to 15% by weight of said water soluble solvent and from 0.4% to 0.8% by weight of said hydrocarbon, perfume or essential oil.

3. The cleaning composition of Claim 1 wherein the solvent is a water soluble glycol ether.

4. The cleaning composition of Claim 3 wherein the glycol ether is selected from the group consisting of ethylene glycol monobutyl ether, diethylene glycol monobutyl ether, triethylene glycol monobutyl ether, poly-propylene glycol having an average molecular weight of from 200 to 1,000 and propylene glycol tert.butyl ether, mono, di, tri propylene glycol monobutyl ether.

5. The cleaning composition of Claim 4 wherein the glycol ether is ethylene glycol monobutyl ether or diethylene glycol monobutyl ether.

6. The cleaning composition of Claim 1 wherein said disinfectant agent is a C₈ to C₁₆ alkyl amine.

7. The cleaning composition of Claim 1 wherein said disinfectant agent is selected from the group consisting of a C₈ to C₁₆ alkyl benzyl dimethyl ammonium chloride and a C₈ to C₁₆ dialkyl dimethyl ammonium chloride.

8. The cleaning composition of Claim 1 wherein said disinfectant agent is chlorohexidine.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 97/18292

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 C11D1/74 C11D1/72 C11D1/825 C11D3/48 C11D3/43
C11D3/18 C11D3/50

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C11D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	WO 97 40133 A (COLGATE-PALMOLIVE CO.) 30 October 1997 see page 3, line 14 - page 7, line 17 see page 11, line 14 - line 24 ----	1-5, 7
P, X	EP 0 748 865 A (COLGATE-PALMOLIVE CO.) 18 December 1996 see page 2, line 11 - line 16 see page 3, line 17 - line 30 see page 4, line 38 - line 50 ----	1-5, 7
A	WO 96 26262 A (COLGATE-PALMOLIVE CO.) 29 August 1996 see page 6, line 26 - page 16, line 10 ----	1-5
A	US 4 420 484 A (GORMAN WILLIAM G. ET AL.) 13 December 1983 see claims 1-18; examples 4-6 -----	1, 7, 8

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

19 February 1998

Date of mailing of the international search report

11/03/1998

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Serbetsoglou, A

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 97/18292

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9740133 A	30-10-97	US 5707952 A AU 2602297 A	13-01-98 12-11-97
EP 0748865 A	18-12-96	CA 2178786 A	13-12-96
WO 9626262 A	29-08-96	US 5523025 A US 5646104 A AU 4927296 A CA 2213626 A EP 0815194 A	04-06-96 08-07-97 11-09-96 29-08-96 07-01-98
US 4420484 A	13-12-83	AT 5330 T AU 6118180 A BR 8005033 A CA 1168949 A DK 347880 A EP 0024031 A HK 3089 A JP 56032598 A US RE32300 E ZA 8004901 A	15-12-83 19-02-81 24-02-81 12-06-84 14-02-81 18-02-81 20-01-89 02-04-81 02-12-86 26-08-81